

wafer 5, on the upper side of which flip chips 6 are presented close together in rows with their connection side upward.

5 The gripper 4, located in the lower turning position, is directed at one of the flip chips 6 and can be telescopically lowered onto it. Said flip chip is sucked onto the end of the gripper and lifted together with the latter off the wafer 5. By moving the  
10 placement head 1 and turning the rotor 3, all the grippers 4 can be successively loaded with the flip chips 6. One of the holding stations of the grippers 4 is assigned a first holder 7, which is aligned by its end with the end of the gripper 4.

15 The flip chip 6 sucked onto the gripper can then be transferred to the holder 7 and sucked onto the end of the latter. By pivoting into a transfer position, represented by dash-dotted lines, the flip chip 6 can  
20 be transferred to a further holder 7, which is directed oppositely facing the first holder and which then takes up the flip chip 6 on its connection side. The second holder 7 is assigned to a downstream holding station of the placement head 1. It can be pivoted out of the  
25 transfer position into a delivery position, which is in line with the gripper 4 of the second holding station and in which the gripper 4 receives the component on its upper side, facing away from the connection side.

30 In figure 3 it is shown how the flip chip 6 can be transferred between the holders 7 and turned in a time-saving manner during the rotation of the rotor 3.

After the turning of the flip chips 6, they are  
35 successively transported into a placement position, represented in figure 2, in which they can be placed in the correct position onto a substrate 8 to be provided with placed components.

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Patent claims

1. A device for placing flip chips (6) on a substrate (8) in the form of a leadframe, the device having a movable placement head (1), which picks up the flip chips (6) from a stock of components (for example 5) and places them on the substrate (8), characterized in that the placement head (1) is provided with a turning device (9) for the flip chips (6), in that the placement head (1) is provided with a multiplicity of grippers (4) circulating in a turret-like indexed manner, in that the turning device (9) is assigned to a stationary part (for example 2) of the placement head (1), in that the turning device (9) respectively takes over one of the flip chips (6) in a first holding station of the grippers (4) and returns it, after turning, to one of the grippers (4) in one of the downstream holding stations.
2. The device as claimed in claim 1, characterized in that the turning device (9) has two pivotable holders (7), one of which can be aligned with the first of the holding stations, in that the second holder (7) can be aligned with a downstream one of the holding stations and in that the two holders (7) can be pivoted into a mutual transfer position, in which their ends, carrying the flip chip (6) and projecting toward each other, are aligned with each other.
3. The device as claimed in claim 2, characterized in that the holders (7) are designed as pivotably mounted suction pipettes, in that the grippers (4) are designed as suction grippers protruding radially from the placement head (1),

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5 in that the pivoting axes (10), perpendicular to the turning plane of the grippers (4), of the holders (7) are arranged in axial extension of the grippers (4) and in that longitudinal axes of the holders and of the grippers are in line with one another during the transfer between them of the flip chips.

10 4. The device as claimed in one of the preceding claims, characterized in that between the holders (7) directed oppositely facing other and in line with each other in the transfer position there is a clearance, which is somewhat larger than the thickness of the flip chips (6).

15 5. The device as claimed in one of the preceding claims, characterized in that the first and second holding stations are arranged immediately following each other.